

PEABODY INSTITUTE LIBRARY

PEABODY MASSACHUSETTS

FEASIBILITY REPORT
ON
REHABILITATION AND EXPANSION CAPABILITIES

NOVEMBER 4, 1974



Interact

ARCHITECTURE · CONSTRUCTION MANAGEMENT
BOX 683 ACTON, MASSACHUSETTS 01720

(617) 263-3518

I. EXISTING STRUCTURE

A. DESCRIPTION

The Library is a 2 story plus basement, wood frame building with exterior brick masonry bearing walls. Each level contains approximately 6,100 square feet of floor area. The roof is supported by "Queen-Rod trusses" supported on the exterior masonry walls. Refer to the "Existing Building As Built" included in this report for a graphic description.

B. CONDITION

The general condition of the building is as follows:

1. Exterior:

- (a) Roof slates damaged in some locations.
- (b) Exterior brick wythe at northeast corner of stair tower pulling away from backup.
- (c) Sandstone groins, sills, water table and lintels severely deteriorated.

Comment: The exterior of the building is remarkably free from deterioration for a building of its age.

2. Interior:

- (a) General dilapidation throughout due to age of structure.

- (1) Ceiling at second level considerably deteriorated to the point of being dangerous.
- (2) Plumbing in poor condition - only 25% is now copper.
- (3) Electrical service is marginal even though there is a relatively new 200 amp 3 phase service. The fusing is antiquated and does not sub divide the building services adequately.
- (4) Sprinkler System appears to be in good condition except that the sprinkler heads have reached their maximum use life and should be replaced.
- (5) The original gas piping from the original gas lights are still exposed and may still be active.
- (6) Egress stairs from Second Level do not conform to code.

- (b) Structural Adequacy

- (1) References: The load capacity of the framing elements is determined based on the "Timber Construction Manual" of the American Institute of Timber Construction.

Continued

I. EXISTING STRUCTURE (Continued)

The Building Officials Conference of America, BOCA Basic Building Code/1970 (BOCA Code). Commonwealth of Massachusetts Board of Standards Building Code, and certain tables from "The Architect and Builders Pocket-Book", F.E. Kidder, C.E., Ph.D., 1906. These documents reflect currently accepted practices for determining the strength and required safety of buildings and in the case of "Kidder" safe loads of structural elements no longer used.

(2) Roof Structure

The roof structure is adequate to safely support snow loads required by code, the superimposed ceiling load and wind loads. One truss which has been modified so that the load is added to the collar beam may be slightly overstressed by carrying ceiling loads to the upper chords near the peaks instead of at the rod panel points.

(3) Second Floor Structural Capacity

Joist capacity ($f_b = 1800$ psi for exterior bay (14'-6") adjacent to exterior walls is approximately 300 lbs/sq ft. The joist capacity for the interior bay (18'-6") center section is approximately 250 lbs/sq ft. The beams that run parallel to the exterior walls, however, limit the safe carrying capacity of the floor system. The live load capacity of these beams is only 80 lbs/sq ft. The area tributary to the columns is approximately 250 sq ft. The cast-iron column has a capacity of approximately 52,000 lbs. (safety factor -8). For a safe carrying capacity of 210 lbs/per sq ft.

(4) First Floor Structural Capacity

Joist capacity ($f_b = 1800$ psi) is approximately 210 lbs/sq ft: considerably in excess of library stack loads. The beams that run perpendicular to the exterior wall limit the safe load capacity of floor system. The exterior beams can safely carry a load of 120 lbs/sq ft or 95 lbs/sq ft live load (55 lbs/sq ft less than that required by most building codes

Continued

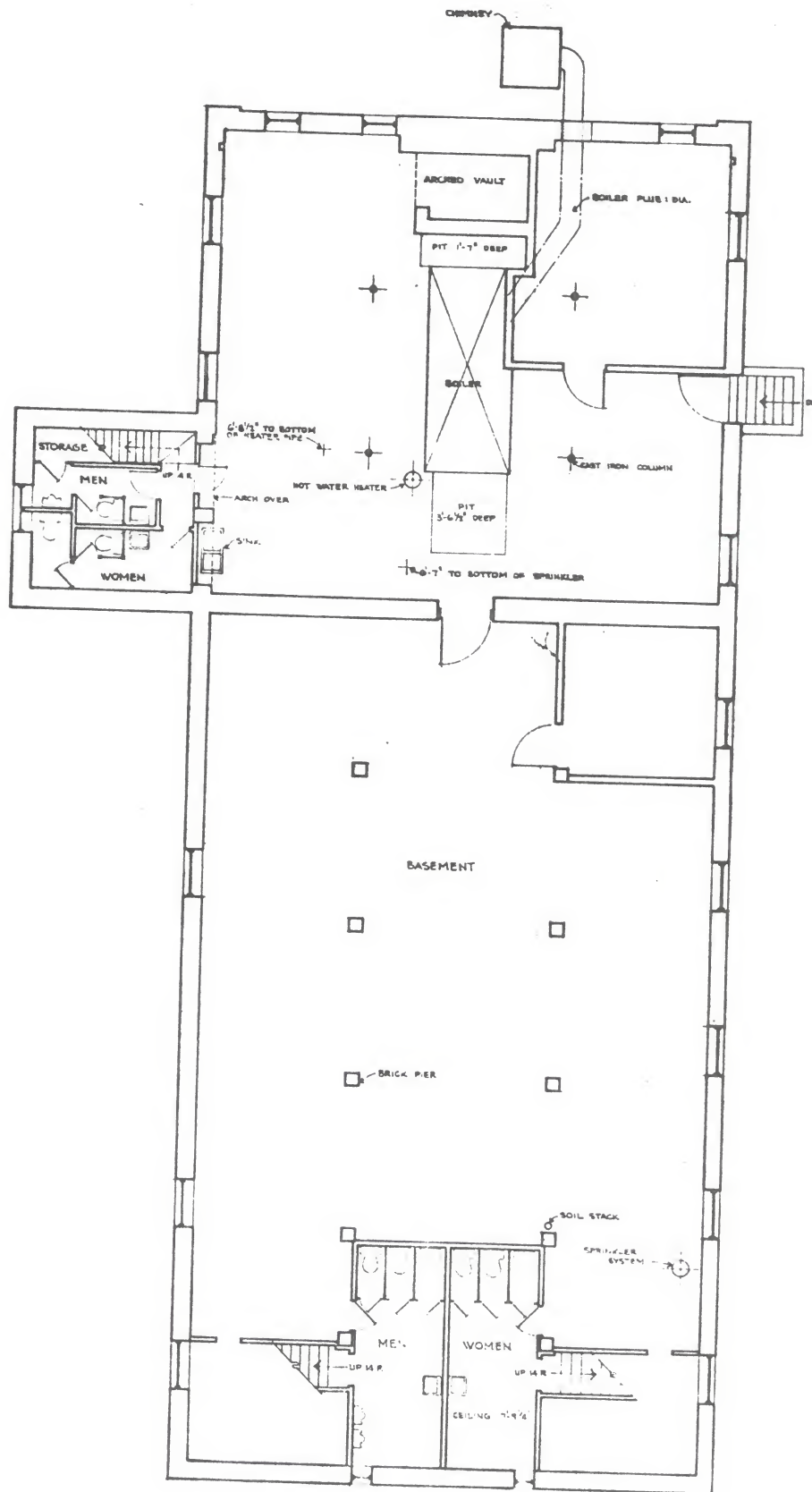
I. EXISTING STRUCTURE (Continued)

for stack areas). The interior bay between columns can safely carry only 80 lbs/sq ft or 55 lbs/sq ft live loads. The piers below the first floor can easily support loads in excess of 100,000 lbs or 200 lbs/sq ft load on the floor tributary to columns.

(5) Lateral Loads

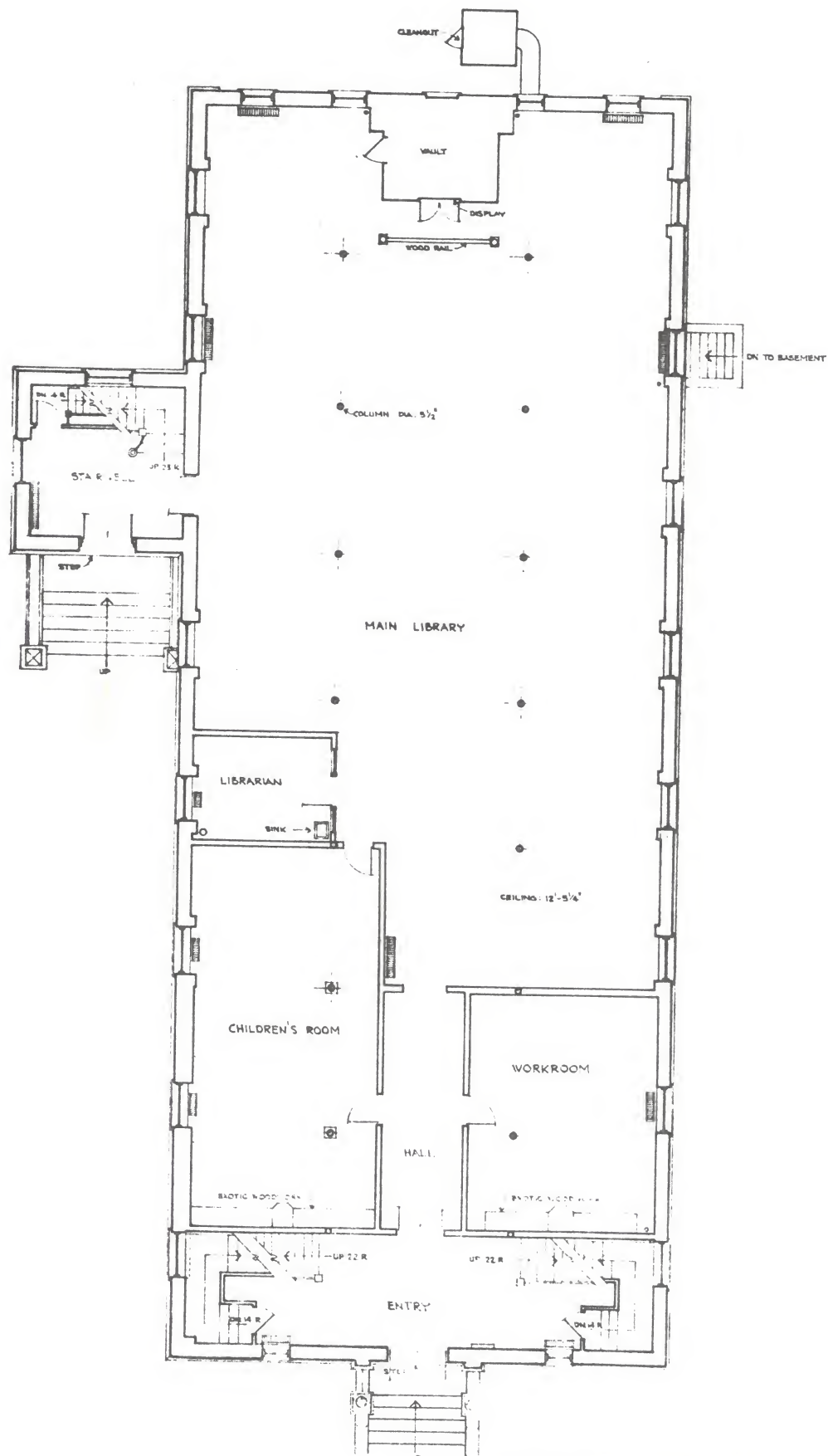
The exterior masonry walls are capable of transferring wind loads as shear walls to the foundation. In the event of a major seismic disturbance this building will suffer considerable damage.

Comment: It is our structural engineer's opinion that this building is sound and is capable of carrying the vertical loads for which it has been used. There is very minor structural deterioration; the effects of age. Detailed structural calculations are available should there be a need to review the conclusions in this report.



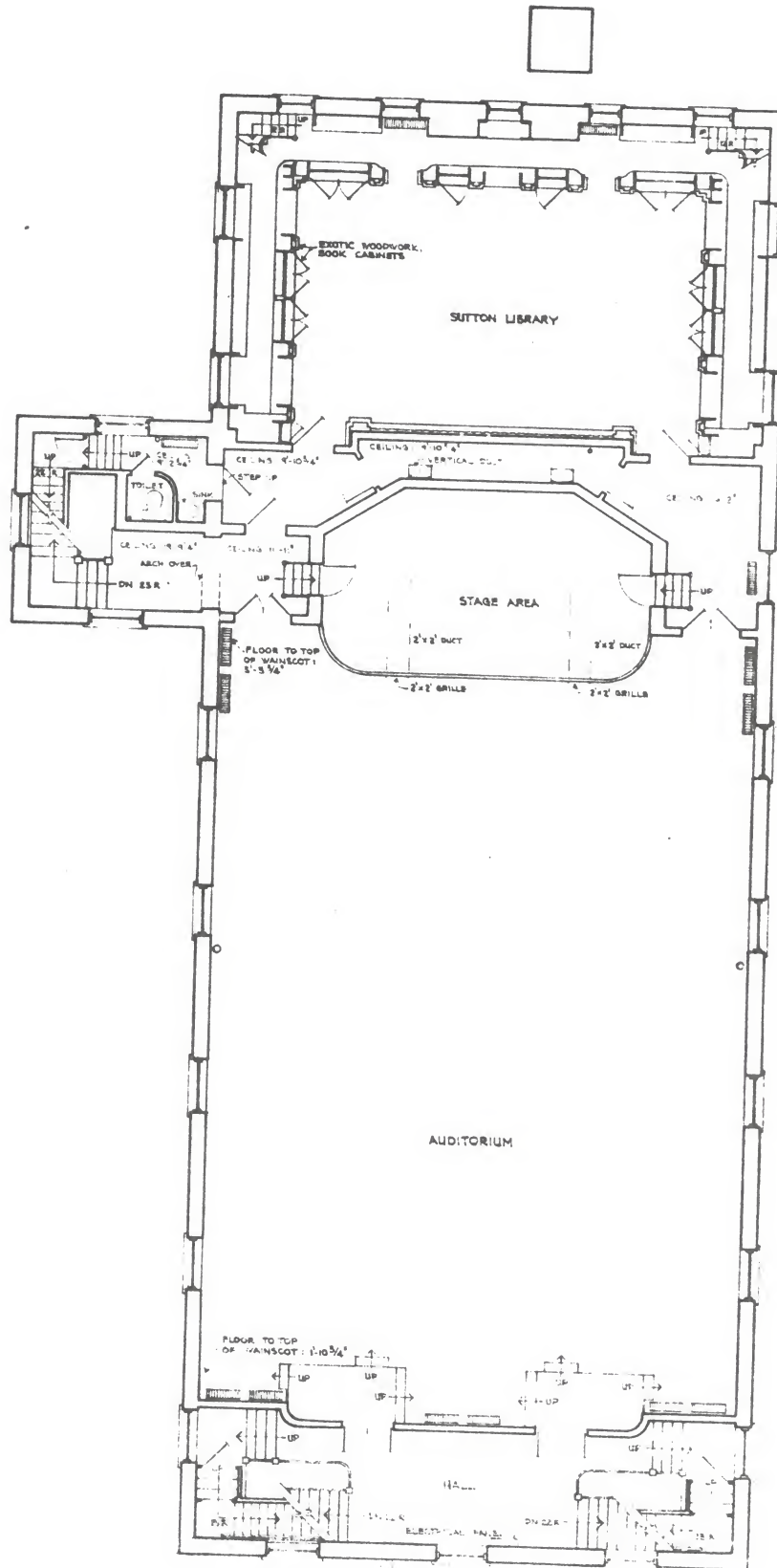
EXISTING BUILDING-AS BUILT

BASEMENT LEVEL



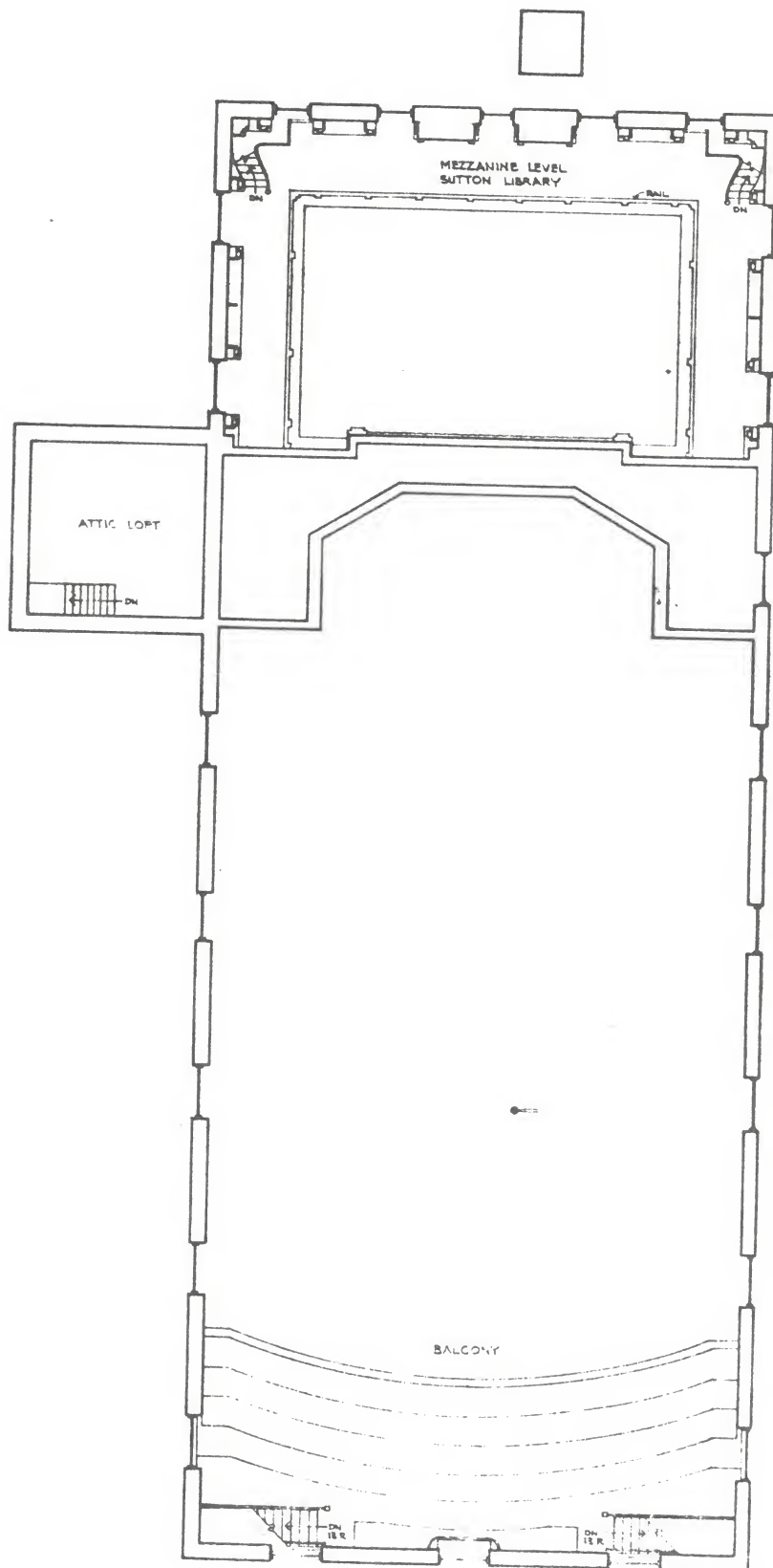
EXISTING BUILDING-AS BUILT

FIRST LEVEL



EXISTING BUILDING-AS BUILT

SECOND LEVEL



EXISTING BUILDING-AS BUILT

BALCONY LEVEL

SCALE: 1/4" = 1'-0"

II. REHABILITATION OF EXISTING BUILDING

A. The following action should be taken to bring the existing building up to minimum usable standards:
Note: Refer to enclosed drawings "Existing-As Renovated"

1. Demolition:
(Remove the following; plaster ceiling, sloping floor and stage in auditorium; existing walls; plumbing; existing balcony; existing stairs.)
2. Install new columns in basement to bring structural capacity of First Level up to code requirements.
3. Restructure Second Floor to bring structural capacity up to code requirements.
4. Install: a) new stairs.
b) new ceilings throughout.
c) new interior doors, door frames, hardware.
d) new cabinet work.
e) new elevator and shaft.
5. Repair existing roof.
6. Stabilize exterior sandstone.
7. Repoint exterior masonry where required.
8. New wall finish throughout.
9. New floor finish throughout.
10. Renovate Sutton Library ceiling.
11. New Plumbing System.
12. New 400 amp 3 phase Electrical Service.
13. Update internal wiring distribution to conform to code.
14. New heating system using boiler that is on premises.
15. Air condition building.
16. Replace sprinkler heads.

Continued

II. REHABILITATION OF EXISTING BUILDING (Continued)

- B. To maximize the usefulness of the existing building envelope we recommend that a third level be installed above the existing Second Level.
- C. We recommend further investigation be conducted during the preparation of Working Drawings as follows:
 - 1. Establish the wood specie for the floor beams and roof trusses.
 - 2. Survey the roof trusses to establish chord and web sizes, exact location of panel points, and splices and types of connections at panel points and splices.
 - 3. Establish the safe soil bearing capacity by examining soil boring data for nearby buildings or making new borings (in some cities building permits to construct must be accompanied by soil data so that examination of building department records may be sufficient).
 - 4. Determine the type and size of footings under the piers.
 - 5. Investigate bearing conditions and wood condition at exterior masonry walls (specifically look for water damage to beams and joists bearing on the masonry).
 - 6. If the building is renovated, further survey should be made to look for hidden defects that can only be found when ceilings, floors and partitions are removed. We anticipate any defects to be quite minor.

III. NEW ADDITION TO REHABILITATED BUILDING

A. Space needs:

The following areas are required in a well designed Central Library Building for Peabody, Massachusetts

1. Book Storage.
2. Reading Areas.
3. Staff Work Area.
4. Display of Entrusted Properties.
5. Group Meeting Room.
6. Mechanical, Toilet, Maintenance Areas.
7. Circulation (Elevators, Stairs, etc.)

- B. The enclosed drawings entitled "Existing Building as Renovated - With Addition" graphically describe the needs for a town the size of Peabody.

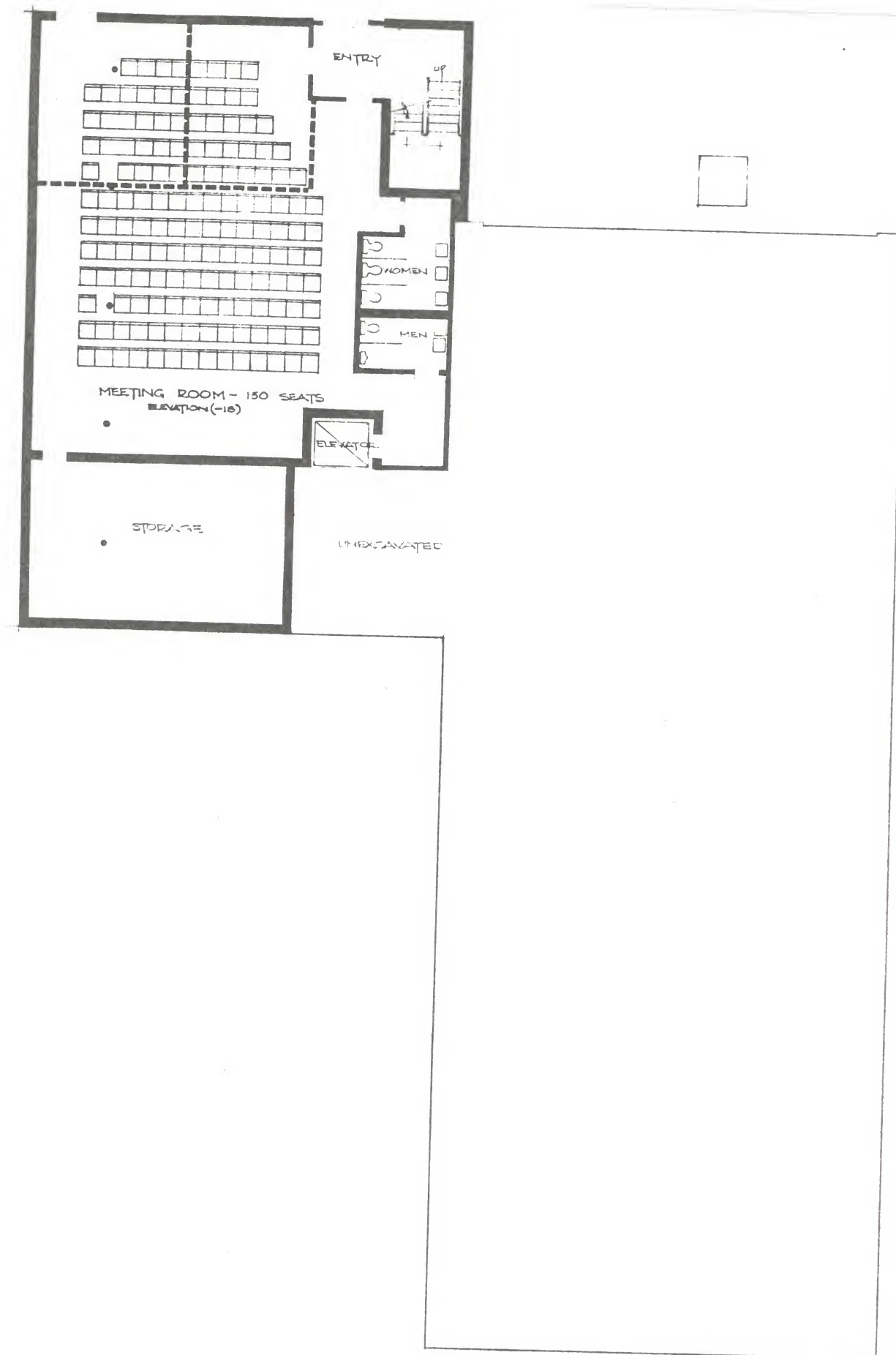
The vital statistics are as follows:

<u>No. of Volumes</u>	176,800
<u>No. of Reader Spaces</u>	151
<u>No. of Seats in Meeting Room</u>	150

Total Square Footage

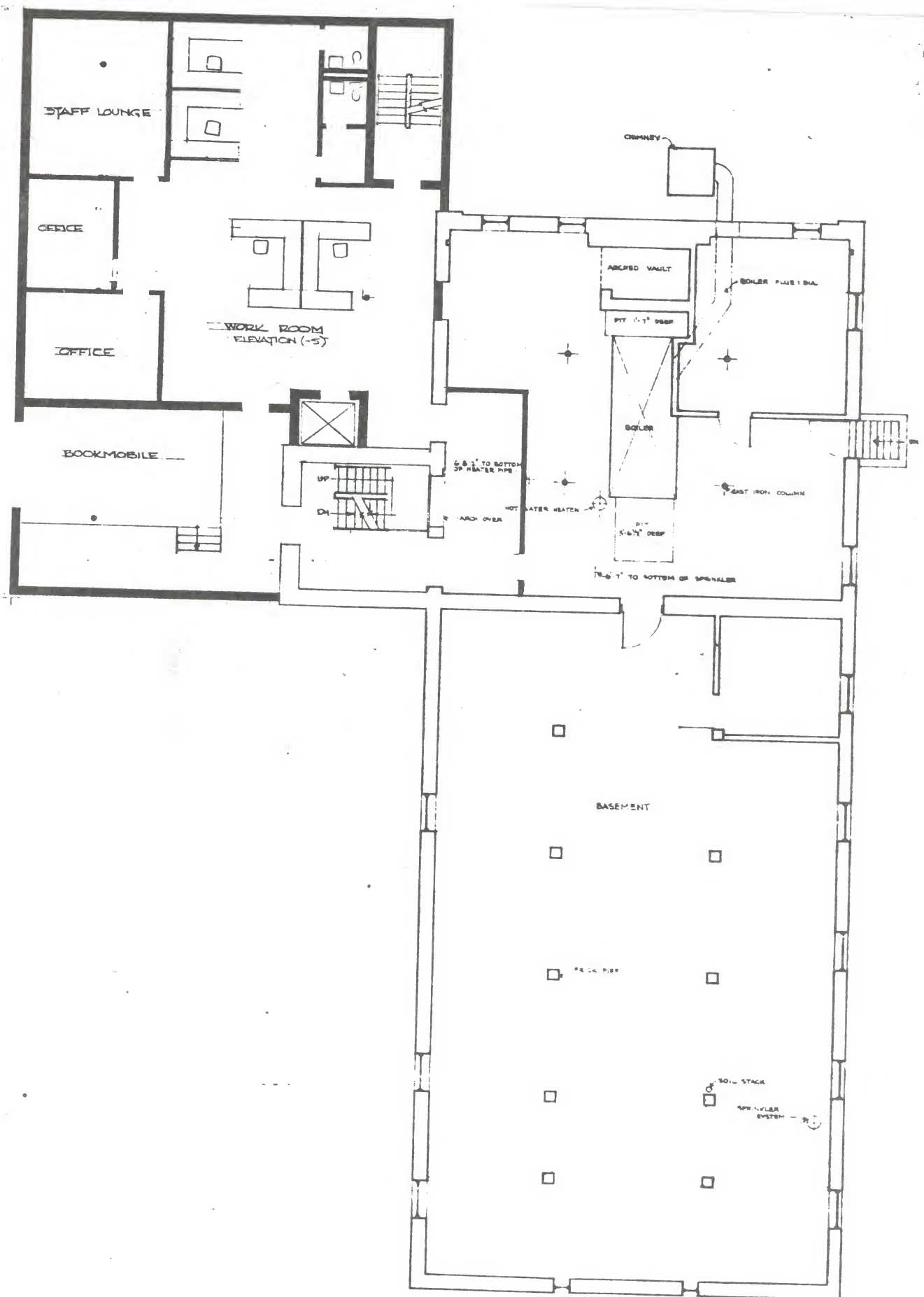
(Not including Basement of Existing Building) 28,449

Comment: The addition as drawn and shown in the model is not intended as a definitive design. It is intended to describe space need solutions on a conceptual level and how they might relate spatially to the existing structure.



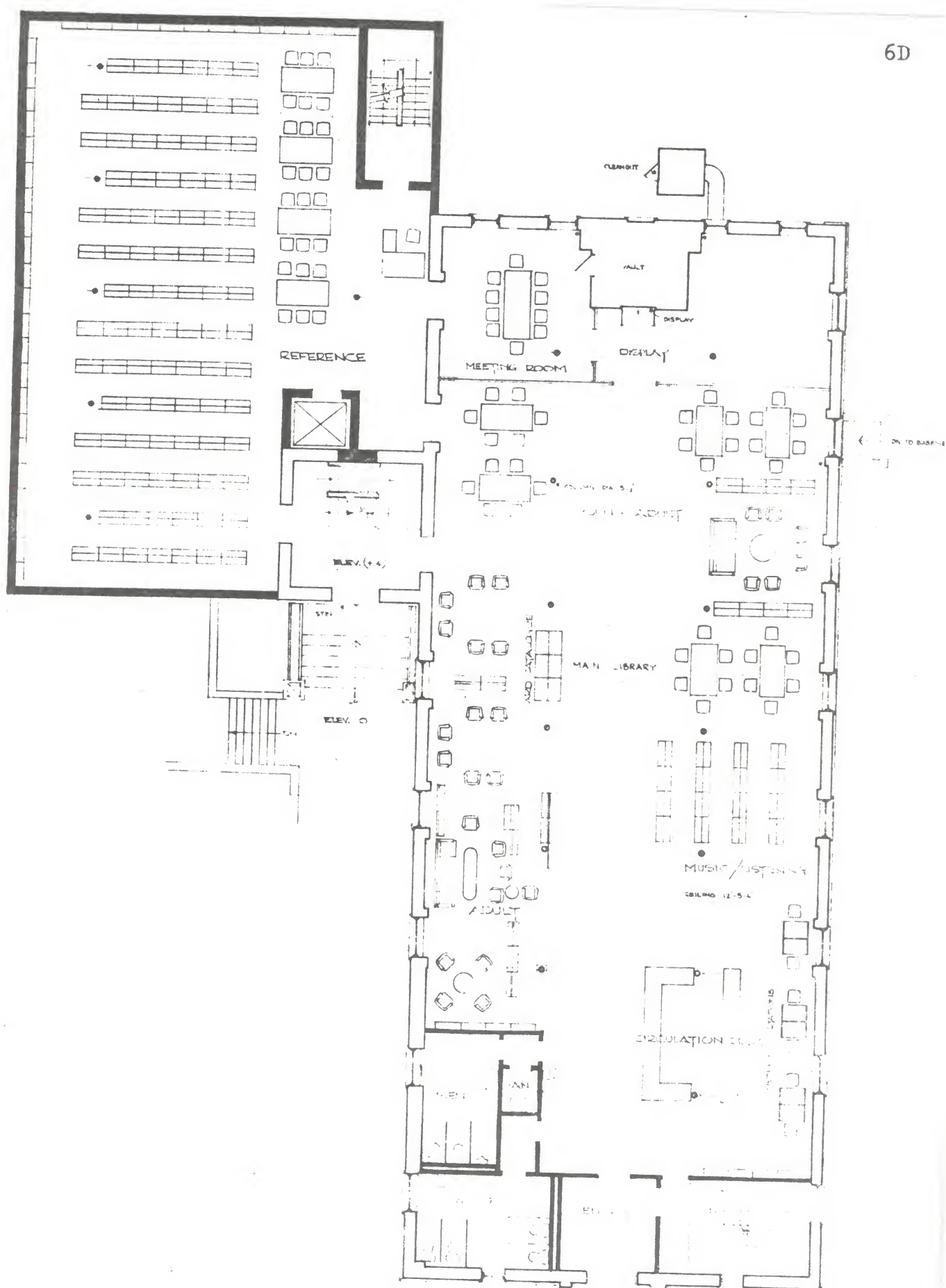
EXISTING BUILDING-AS RENOVATED
PLUS ADDITION

SUB-BASEMENT LEVEL

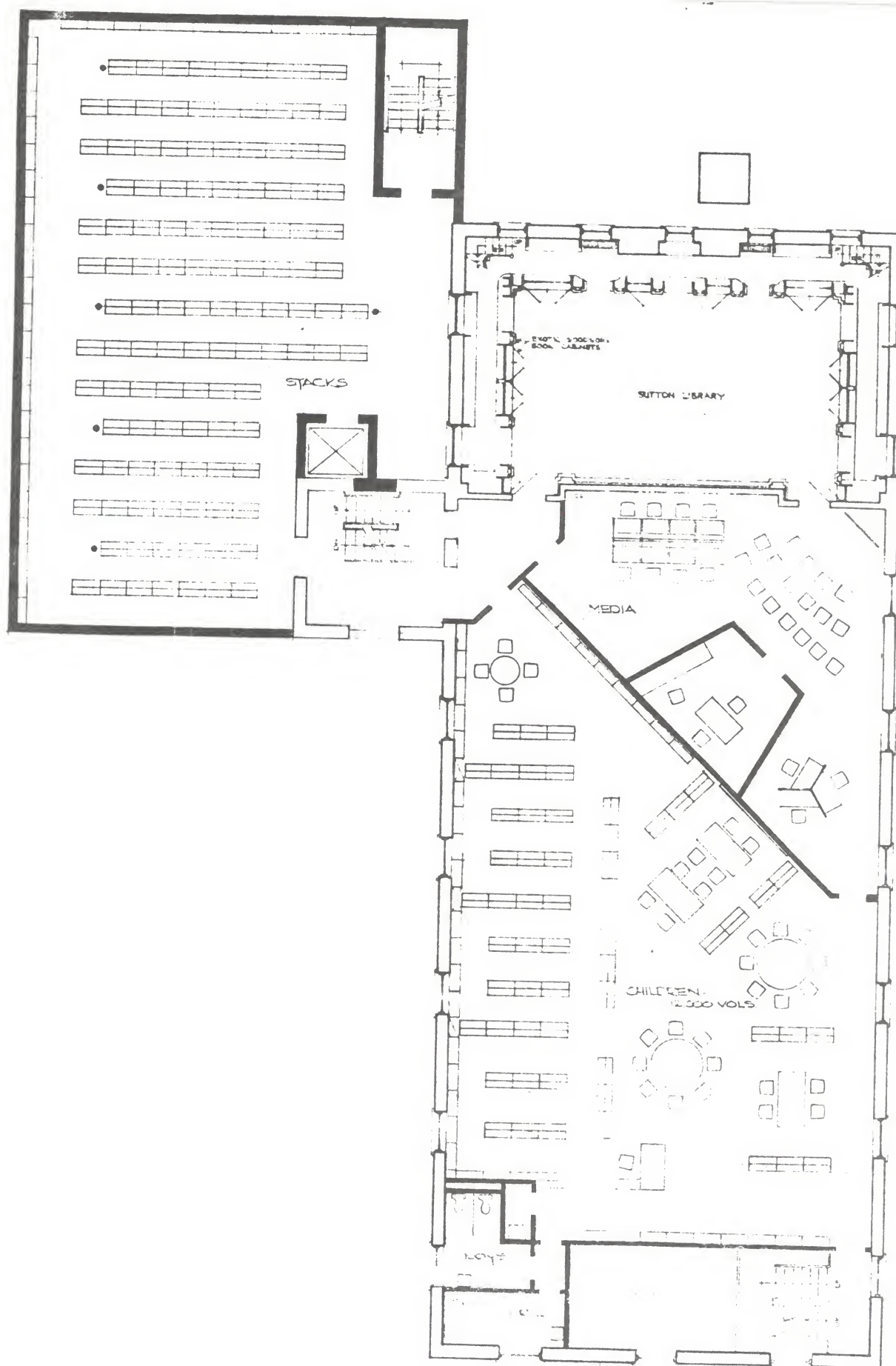


EXISTING BUILDING-AS RENOVATED
PLUS ADDITION

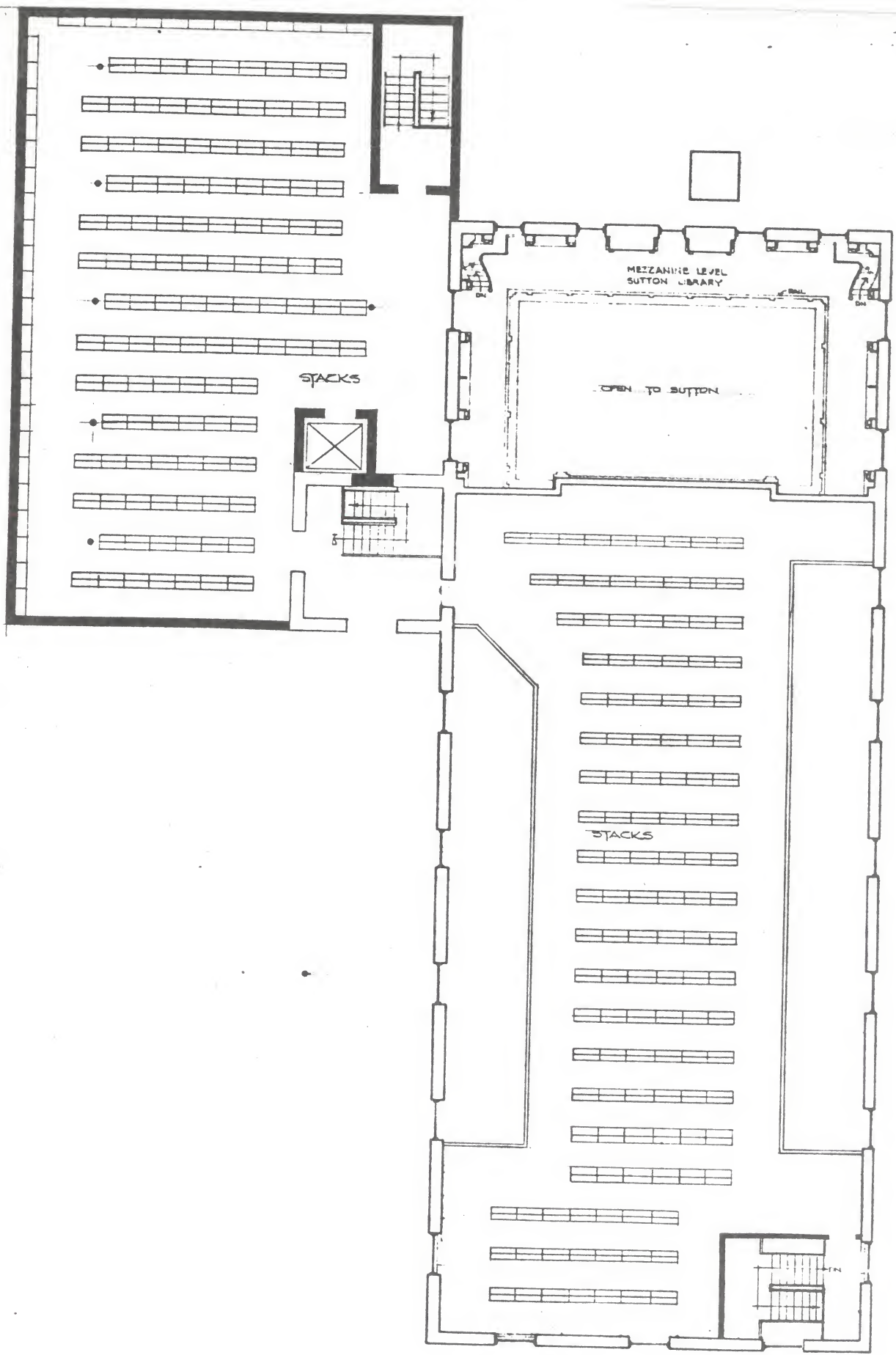
BASEMENT LEVEL



EXISTING BUILDING-AS RENOVATED
PLUS ADDITION
FIRST LEVEL



EXISTING BUILDING-AS RENOVATED
PLUS ADDITION
SECOND LEVEL



EXISTING BUILDING-AS RENOVATED
PLUS ADDITION

BALCONY LEVEL

PEABODY INSTITUTE LIBRARY * REHABILITATION WITH ADDITION

VITAL STATISTICS

<u>Present Building</u>		<u>Rehabilitation with Addition</u>
45,000	- <u>Volumes</u> -	176,800
42	- <u>Reader Spaces</u> -	151
0	- <u>Seats-Lecture Room</u> -	150
<u>Net Useable Square Feet</u>		
3400 (approximately)	-Basement-	3400 Storage (approximately)
5167 "	-First Level-	5167 "
0 "	-Second Level-	4417 "
0 "	-Third Level-	3000 "

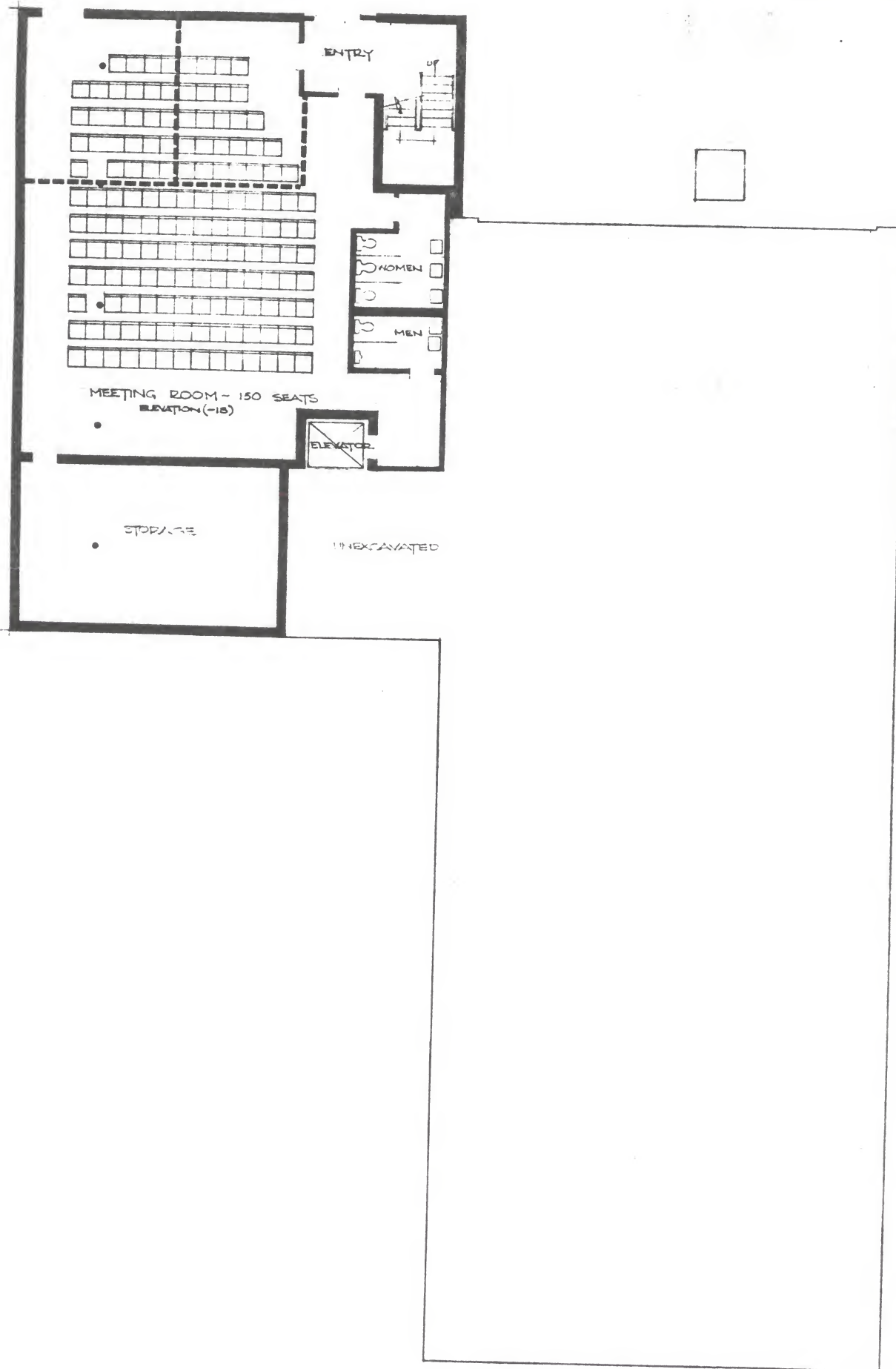
Approximate Useable Square Feet - New Addition with Rehabilitated Building (Not Including Basement) = 28,449.

EXPANSION BENEFITS

Lecture Room (150 Seats)
Adequate Staff Work Room
Staff Lounge and Offices
Bookmobile Garage (Facility for Loading and Unloading)
Adequate Number of Reader Spaces
Young Adult Study Area-Adult Reading Room-Children's Library
Meeting Room
Display Area for Entrusted Properties
Space for Art Exhibits
Reference Area
Improvements and Addition to Mechanical, Maintenance, and Toilets
Elevator and Two New Stairways
Media Room with Stage
Expanded Stack Area (See volume figures above)
Air Conditioning Throughout
Complete Refurbishing of Interior (Floors, New Floor Supports, Ceilings, Walls, Plumbing, and Electrical)
Refurbishing of Exterior Walls and Roof

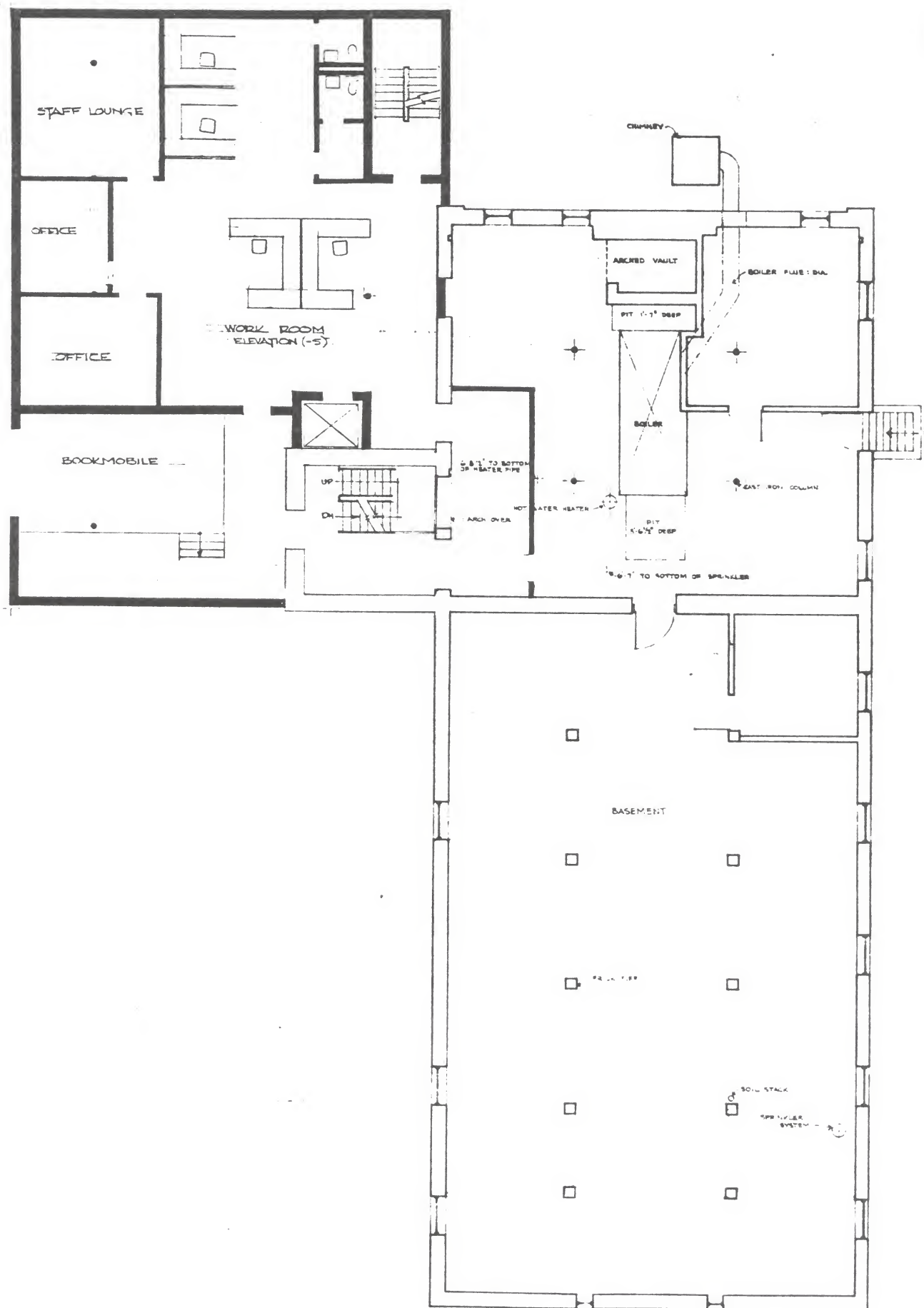
Please Refer to Attached Floor Plans





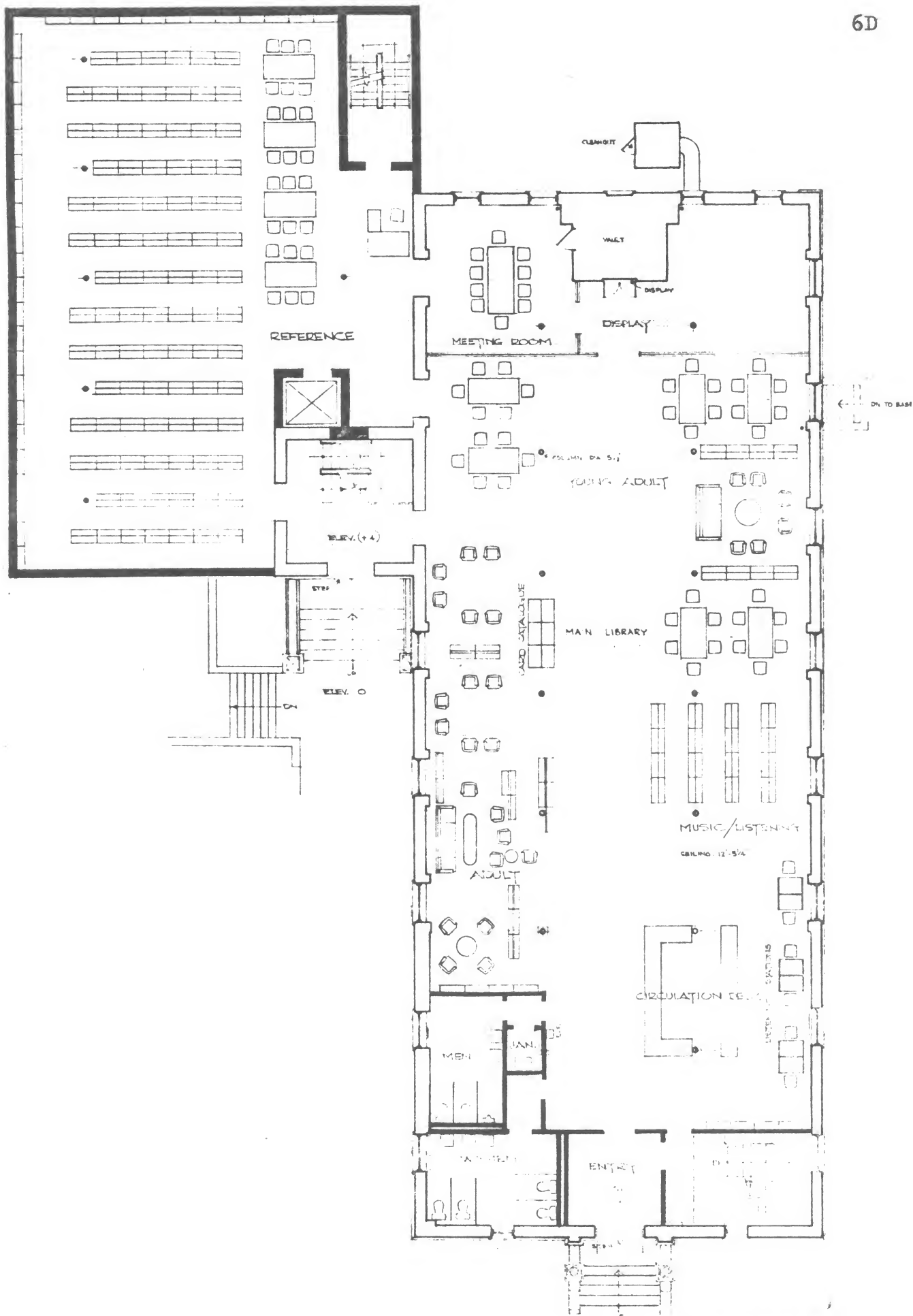
EXISTING BUILDING-AS RENOVATED
PLUS ADDITION

SUB-BASEMENT LEVEL

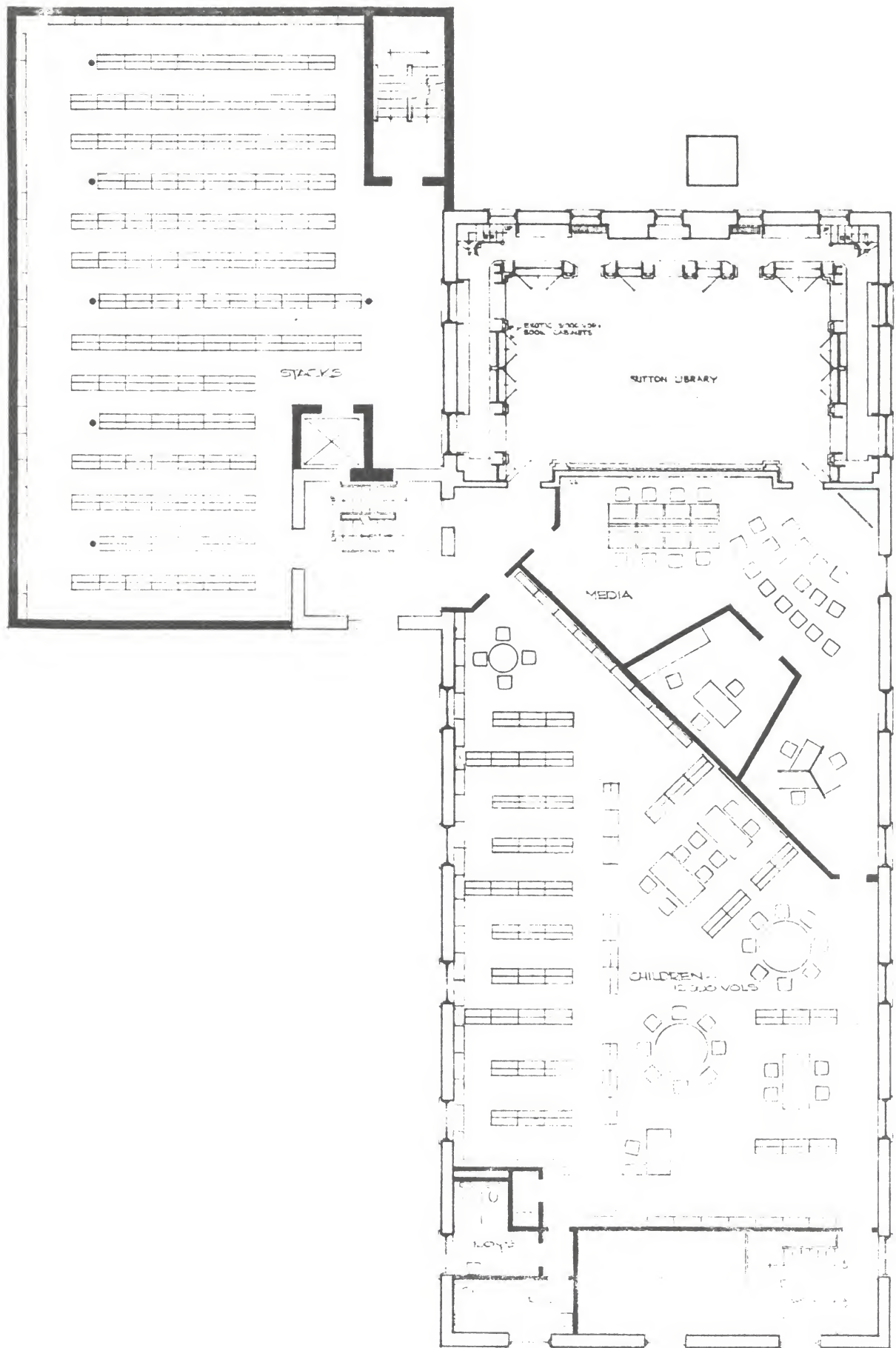


EXISTING BUILDING-AS RENOVATED
PLUS ADDITION

BASEMENT LEVEL



EXISTING BUILDING-AS RENOVATED
PLUS ADDITION
FIRST LEVEL



EXISTING BUILDING-AS RENOVATED
PLUS ADDITION
SECOND LEVEL

